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The Montana Power Company long range plan

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THE MONTANA POWER COMPANY
1982 LONG RANGE PLAN

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THE MONTANA POWER COMPANY

ANNUAL LONG RANGE PLAN

Filed as April 1, 1982
Pursuant to the Montana Major Facility Act

I.1 INTRODUCTION

Pursuant to Section 75-20-501 of The Montana Major Facility Siting Act and Section 36.7.701-702 ARM, The Montana Power Company hereby submits as of April 1, 1982, its annual Long Range Plan to the Montana Department of Natural Resources and Conservation. Certain voluminous exhibits which are part of this Long Range Plan are not included in each copy of the plan, but are on file with the Montana Department of Natural Resources and Conservation for inspection.

It should be noted that the information in this Long Range Plan represents the best efforts of The Montana Power Company to set forth its plans and projections based on present knowledge, data and circumstances. Because present circumstances may unpredictably change, the plans and projections set forth herein may also necessarily change.

II. THE GENERAL LOCATION, SIZE AND TYPE OF THE UTILITY FACILITY TO BE OWNED AND OPERATED BY THE MONTANA POWER COMPANY, WHOSE CONSTRUCTION IS PROJECTED AS OF APRIL 1, 1982, TO COMMENCE DURING THE ENSUING TEN YEARS, AS WELL AS THOSE FACILITIES TO BE REMOVED FROM SERVICE DURING THE PLANNING PERIOD[1].

II.1 ENERGY, GENERATING AND CONVERSION PLANTS AND ASSOCIATED FACILITIES

Energy, generating and conversion plants to be owned by The Montana Power Company whose construction is projected to commence during the ensuing ten (10) years, including an estimate of applicable filing and construction dates are shown on the chart entitled "Resource Plan" marked Exhibit "A" and attached hereto. Montana Power's load and resource projections are a complex and evolving process and receive substantial time and study by Montana Power. A book prepared by Montana Power Company, "The Montana Power Company - 1982-2001 Projections of Electric Loads and Resources," February-1982, is submitted herewith as Exhibit "B."

This "Resource Plan" has been chosen to provide a reliable, timely, economic, and environmentally compatible plan for providing our future power requirements. The "Resource Plan" provides the flexibility needed to incorporate possible changes and/or modifications which may result due to changes in economics, technology and legislation. The logical assumptions used in choosing this particular " Resource Plan" are described below.

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[1] Montana Major Facility Siting Act 75-20-501(2)(a).

II.1.1 Resource Plan Assumptions

The primary assumptions used for the "Resource Plan" are that all current generation plants will remain available to us throughout the period, that existing contracts for purchases or sales will run their term without withdrawal or renewal, and that additional resources required to meet the forecasted load will be a combination of base load thermal plants in approximately nominal 350 MW increments, hydrogeneration, and other resource alternatives.

The logic behind these assumptions is as follows:

1. Our existing generation plants can all be kept in good and efficient operating condition with the application of proper maintenance through the period shown. The Bird Plant will be nearly 50 years old by 2000 -- somewhat beyond a typical life for such a plant, but its use for most of those years as a reserve plant should add substantially to its life. All the hydro plants are assumed to be relicensed to us as their current licenses expire. The current competition for a new license at Kerr makes this assumption a little insecure, but until the matter is settled we cannot assume otherwise.

2. With the exception of one contract, all of our existing purchase and sales contracts with "out of state" utilities expire before 1988. Because of

the anticipated shortages of energy and peak in the Northwest region through the 1980's (and possibly beyond), we have assumed that we will be unable to renew these contracts upon their expiration. Excluded from this category are sales to the Flathead Irrigation Project of the U.S. Indian Irrigation Service and sales to Central Montana G&T Cooperative which are included as part of our firm loads.

3. Our current knowledge of the energy technologies and economics through at least the 1980's in Montana indicates at this time that new energy requirements must be met basically with base-load fossil fired thermal and hydro plants. Our Resource Plan provides enough flexibility to accommodate alternative resources when and if they become economically competitive with the future mix of resources we presently perceive. Economies of scale would indicate that about 350 MW are most economic in the base load thermal plants. Reserve requirements and other considerations indicate that new energy resources in blocks of 300-350 MW seem appropriate for our system. Peaking requirements and projected deficits will be covered by a combination of purchases, exchanges, load management and/or peaking plants.

II.1.2 Size, Type and Location of Facilities

Currently, as identified in our "Resource Plan," Exhibit "A," attached hereto, our plans center on the hydro plants and base-load coal-fired energy plants, with combustion turbines for peaking. Economics today, the anticipated technology available commercially in the late 1980's, and environmental considerations indicate that energy load in the near future will most likely be met by a coal-fired, steam-electric plant somewhere in Montana. However, this position depends on whether Montana's siting and environmental laws and policies will allow any development in the State. We are currently planning for a 350 MW coal-fired plant, which we expect to be commercial sometime between 1989-1995. Our siting studies show that its preferred location is near Salem, Montana. (This proposed plant was formerly referred to as Resource 89.)

Some modifications or variations to our "Resource Plan" may be available. These possibilities are discussed below in general terms.

1. Conservation -- We have considered in our load forecasts the potential for conservation which can reasonably be expected from voluntary efforts of our customers, barring a catastrophic general economic recession like that of the 1930's and various proposed governmental mandates. Thus, this economic "resource" is already included in our base plan for resource additions.

2. Solar Energy -- Solar energy for central station electric generation probably will not be available until after the year 2000. Active solar space and water heating systems are increasingly available now to individuals who can afford the investment in so equipping their homes or businesses and can take advantage of various tax credits. Architectural solutions to space heating requirements (passive, earth cover, etc.) are playing increasingly important roles in developing solar energy. Our load forecasts include a reasonable allowance for reduction in load from such consumer installed solar heating. The opportunity for electrical load reduction on our system from solar heat is obviously limited because of the existing high incidence of natural gas heating.

We are actively involved with several solar heating projects around the State in monitoring their performance to help develop their economic viability. In order to assist in a transition to these sources, MPC will be loaning money under its "Zero-Interest Loan Program" to those customers interested in pursuing the development of such systems. However, it is expected that such an investment for the typical homeowner will not be cost-effective in the near future.

3. Wind Energy -- The development of both small and large wind turbines has progressed considerably in the past year. The Bonneville Power Administration has three, 2.5 MW wind turbines on their system near Goldendale, Washington. The costs of these large units, however, still reflect the large investments required for research and are not economic when compared with conventional power sources.

The tax advantages available to non-utility entrepreneurs coupled with the Montana Public Service Commission's adoption of Cogeneration/ Small Power Production rates and standard contracts for Montana Power is expected to result in electricity purchases by MPC from independent wind energy producers. However, the magnitude and reliability of such purchases is not known or reasonably estimable at this time. As experience with wind energy purchases is gained, the Resource Plan will be adjusted accordingly.

Montana Power at present is a sponsor of the 160 foot meteorological tower located in the Livingston area which is being used in conjunction with Montana Power's 25 KW wind generator. Multi-Tech is the project manager on this 160 foot tower project. Montana Power is also currently

involved in purchasing wind-generated power from two independent entrepreneurs.

4. Hydroelectric Potential -- We are continuing our re-evaluation of the viability of hydroelectric generation in Montana at (1) "small" undeveloped hydro sites, generally where a reservoir already exists, (2) other larger sites, both within and outside the State, such as Buffalo Rapids, Mountain Sheep-Pleasant Valley, and Carter, and (3) at existing hydroelectric plants where redevelopment with larger or more generators might now be economic for increased peaking capacity. All of the hydro projects listed on Exhibit "A" are dependent upon receipt of licenses from the Federal Energy Regulatory Commission and, in addition, the upgrade of Kerr and construction of Buffalo Rapids are dependent upon agreement with the Confederated Kootenai and Salish Tribes. The adoption of Cogeneration/Small Power Production rates and standard contracts by the Montana Public Service Commission for Montana Power and available tax credits may result in electricity purchases by Montana Power from independent small hydro developers. The magnitude of such purchases is not known or reasonably estimable at this time.

As experience with small hydro purchases is gained, the Resource Plan will be adjusted accordingly.

5. Co-generation -- The only cogeneration project on The Montana Power system at present is at the Champion Packaging plant near Missoula. Although we have discussed possible cogeneration projects with a number of industrial firms and governmental entities, there are no firm plans for additional cogeneration on the MPCo.'s system.

The wood products industry is experiencing a shortage of required by-product fuel and is reticent to use additional natural gas or coal for their process steam requirements because of economic or environmental reasons. Other industries, which normally do not produce by-product fuel, cannot for the same reasons justify producing higher temperature and pressure steam for their process requirements plus additional electric generation.

A number of cities and municipalities are studying the possibility of burning wastes. The output from the boilers could be used to produce electric energy. We have been in contact with these possible suppliers to learn their locations and outputs.

II.1.3 Resource Plan Related to Load and Resources

The "Resource Plan" is shown more specifically as it relates to the estimated loads on the tables reflecting Montana Power Company loads and resources, energy-average. Mw and peak Mw marked as Exhibits "C-1" through "C-4" and attached hereto.

These load-resource tabulations list and summarize the total estimated load requirements and the committed resources which are available to meet these loads. Committed resources are defined to be those resources that exist, are under construction or have been contracted for, such as power purchases and exchanges. The difference between the committed resources and the load requirements give the surpluses and/or deficiencies that are expected to exist in the future. Using these forecasted deficits, additional plants are scheduled into the future, as shown on "Resource Plan," Exhibit "A," attached hereto.

II.1.4 Planning Uncertainties and Future Considerations

Planning for future resource requirements has many uncertainties inherent in the process. Not only can changing load forecasts affect the process, but changing load shapes can also alter the timing, size and mix of future resource requirements. In addition to load-related types of uncertainties, problems of resource planning are further compounded by such factors as fuel availability, environmental concerns and delays in construc-

tion, as well as the availability and cost of financing. As an example, in the past decade we have seen the lead time for the construction of a coal-fired thermal plant increase from four to ten years; most, if not all, of this increase is due to longer times necessary for siting and permitting processes.

As we enter the 1980's, we find ourselves entering an era where conservation and renewable resources will be given top priority in meeting future load growth. Two recent pieces of legislation are, in part, directed at giving such emphasis to future resource planning. Although Montana Power has been actively involved with the implementation of such legislation, the reliability and magnitude of the electricity made available to the Company is unknown at this time. The two acts and a brief description of their possible consequences for resource planning follow:

1. Public Utility Regulatory Policies Act of 1978 (PURPA). Secton 210 of this Act requires the Federal Energy Regulatory Commission to prescribe rules as the Commission determines necessary to encourage cogeneration and small power production, including rules requiring electric utilities to purchase electric power from and sell electric power to Cogeneration and Small Power Production facilities. The Montana Public Service Commission has adopted rules governing Cogeneration/Small Power Production purchases by utilities and will

soon be approving rates and standard contracts which Montana Power must offer to such facilities.

2. Pacific Northwest Electric Power Planning and Conservation Act. The Act is intended to help the Pacific Northwest achieve an adequate power supply, hold electrical rates lower than they would otherwise be and place maximum reliance on conservation and renewable sources of energy in meeting the future demand for electricity in the Pacific Northwest. The Act required the Pacific Northwest Planning and Conservation Council (which is comprised of two members of each of the states of Montana, Washington, Idaho and Oregon) to prepare a plan for meeting the electrical needs of the region. Taking into account the social and economic effects of alternate courses of action, the plan must give highest priority to cost-effective conservation. Renewable sources of energy must be given the next highest priority to the extent that they are cost-effective ranking ahead of conventional thermal generating sources. Next in the rankings are resources relying on waste heat from industrial processes or on conventional fuels burned by highly efficient methods and other resources such as coal and nuclear plants.

II.2 GASIFICATION PLANT AND ASSOCIATED FACILITIES

The Montana Power Company is continuing investigation of economics and feasibility of coal gasification. At this time, we have no plan for engineering, locating, siting, financing, or constructing such a plant. A partner or partners, with substantial financial standing, would be required to raise the necessary capital for such a plant. Whether a coal gasification plant or plants would be proposed within the next ten years will depend, among other things, on such factors as demand for gas on our system, the continued availability of gas from Canada, new discoveries of gas available to Montana Power in Montana and neighboring states, an Alaskan pipeline which would make gas available to Montana, and development of gasification technology and availability of capital.

II.3 ELECTRIC TRANSMISSION LINES

Electric transmission line construction projects projected to commence during the next ten years may be classified for purposes of discussion into two groups. The first group consists of those transmission lines for which application has or will most likely be made or a certificate has been received. A second group consists of transmission lines which are now under study by The Montana Power Company for maintaining adequate service to customers for which application may be made during the next ten years. Whether and when these facilities will be built depends upon several

factors, including the results of studies now under way by The Montana Power Company, and the future load growth.

II.3.1 Transmission For Which Application Likely

The transmission lines in this first group with their general location and appropriate length and voltage, and their approximate date for filing of application, pre-construction and construction, are shown on the chart entitled "Transmission", marked as Exhibit "D" and attached hereto. Preconstruction activities may include surveying, environmental assessments, right-of-way acquisitions, and centerline location.

II.3.2 Transmission For Which Application May Be Made

The transmission line construction projects in the second group along with their approximate general location, approximate length and voltage, and approximate date for filing of application and construction are shown on the chart entitled "Potential Transmission," marked as Exhibit "E" and attached hereto.

Siting studies are in progress for the Salem base-load energy plant. Detailed transmission studies including power flow and stability analysis have only recently been started so that no specific transmission lines can be listed. It is expected, however, that maximum utilization of the existing transmission facilities will be made and that details of the system additions required for the Salem Plant will be submitted in future editions of the "Long Range Plan."

Hydro projects or additions to existing projects, with the possible exception of Buffalo Rapids, would likely require little or no additions to the existing transmission system. Studies have not been run to provide the final transmission details. The Carter project would be located on the Missouri River near Carter, Montana, and the Buffalo Rapids project would be located on the Flathead River below the Kerr project.

Possible additions of other facilities to our system, discussed previously, may also require additional transmission, but no specific details are yet available.

II.3.3 Possible Relocations, or Upgrading of Transmission

Transmission lines which may be relocated, reconstructed or upgraded which constitute "facilities" or "associated facilities" under the Act, are shown on the chart entitled "Transmission Projects for Conversion to Higher Voltage Levels or to be Reconductored," marked as Exhibit "F" and attached hereto. Transmission lines which are not "facilities" or "associated facilities" under the Act are not included because (1) it is impossible to determine which, if any, small transmission lines not covered by the Siting Act may be relocated, reconstructed or upgraded; and (2) it is our position that the requirement in the regulations requiring information on transmission facilities of a design capacity of 50 kilovolts is beyond the scope and legal authority of the department because those transmission

lines are not subject to the jurisdiction of the department under the Act.

III. A DESCRIPTION OF EFFORTS BY THE MONTANA POWER COMPANY TO COORDINATE ITS PLANS WITH OTHER UTILITIES AS TO PROVIDE A COORDINATED REGIONAL PLAN FOR MEETING THE UTILITIES' NEEDS OF THE REGIONS[2]

III.1 GENERAL

Two basic facts are evident from examining The Montana Power Company's coordinated regional planning. First, there is a great amount of cooperation among private and public utilities in the Pacific Northwest. Secondly, there are many benefits to The Montana Power Company and other utilities in the Pacific Northwest and to their customers as a result of this regional cooperation.

The Montana Power Company regional efforts to improve its system reliability and availability of power supply are directed primarily to cooperation with other utilities in the Columbia River Basin of the Pacific Northwest because the River Basin provides a logical planning unit from an historical, geographical and electrical system standpoint.

A discussion of the Pacific Northwest Electric Power Planning and Conservation Act is set forth above on page 12.

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[2] Montana Major Facility Siting Act 75-20-501(2)(b).

The Montana Power Company has many agreements, as described in detail below, with other utilities in the Columbia River Basin. Montana Power Company continues these regional efforts to improve reliability and availability of power supply with the publicly-owned utilities (such as rural cooperatives, municipals, and public utility districts) and with privately owned utilities (such as Puget Sound Power and Light Company, The Washington Water Power Company, Portland General Electric Company, Pacific Power and Light Company, etc.) and with other government agencies (such as Bonneville Power Administration, Corps of Engineers and Western Area Power Administration). Montana Power also works closely with utilities in Montana, including the rural cooperatives.

III.2 COOPERATION AMONG UTILITIES

Cooperation among utilities in the Pacific Northwest has historically evolved, and now is structured by various organizations and agreements. For example, these organizations and agreements include:

(1) Western Systems Coordinating Council which was organized August 4, 1967, to promote reliability of bulk power electric systems in the West. Members now include twenty (20) investor-owned and twenty-seven (27) publicly or cooperative-owned systems as well as fourteen (14) affiliated member electrical systems. The area covers all or parts of fourteen (14) western states, Alberta, and British

Columbia. The purpose of the Council is to provide a formal means for exchange of data and information, and to make regional studies and recommendations that will have a favorable bearing on the reliability and adequacy of electric service in the West.

(2) The Pacific Northwest Utilities Conference Committee consists of 108 non-federal public agencies and seven private companies. Its purposes include the coordination of load/resource planning in the Northwest region. The Montana Power Company is now an active and formal member of the Committee.

(3) The Northwest Power Pool, of which The Montana Power Company is one of the organizers, coordinates the bulk power system operation in the Northwest area. It is a longstanding and successful voluntary power pool and one of the oldest in the nation. Members of the Northwest Power Pool coordinate and optimize their respective bulk system operations to enhance reliability and efficiency.

(4) The Intercompany Pool (ICP) is a formal power pool organization of seven investor-owned utilities within the Northwest Power Pool area. Its express purposes include joint planning for additional required resources and transmission, pooling of reserve requirements, and optimizing use and distribution of secondary energy among the members.

(5) The Pacific Northwest Coordination Agreement was culminated in 1964 after years of negotiation among

private and public utilities on the Columbia River System. Its principal purposes are to coordinate and optimize hydro generation operation and to allow equitable distribution of benefits from hydro storage developments in the Columbia River Basin.

(6) The Pacific Northwest Power Company, of which The Montana Power Company is a participant, was formed to pursue development of hydro-generation, particularly on the Snake River.

(7) Other agreements among individual utilities such as the AMPS Agreement (Associated Mountain Power Systems), consisting of Pacific Power and Light Company, Utah Power and Light Company, The Washington Water Power Company, The Montana Power Company and Idaho Power Company, are designed for the exchange of power and sharing of transmission capacity. For a limited period this agreement also provided for sharing the costs and outputs of particular steam-generating plants in Wyoming.

(8) The Montana Power Company has been working with Montana-Dakota Utilities to coordinate and optimize gas supply within their systems and Montana.

(9) The Montana Power Company is a party to the Missouri River Coordination Agreement with the Western Area Power Administration which is designed to optimize water power resources in the Missouri River Drainage.

(10) There are also agreements and working relationships with the federal agencies such as the Bonneville Power Administration and the Western Area Power Administration, and with various cooperatives in the State of Montana such as the Central Montana G&T.

III.2.1 Benefits of Regional Cooperation

The benefits of such regional agreements and organizations as discussed above are:

(1) Maximizing the use of resources;

(2) Minimizing the cost of energy to utility customers;

(3) Providing reliability and better service; and

(4) Minimizing environmental impact.

These benefits and objectives are studied and pursued in consideration of climates, water sheds, time zones, types of loads, etc., of each utility in the region. The exchange of power among utilities in the joint participation and construction and operation of facilities inures to all of these objectives.

An example of this type of regional planning by the Pacific Northwest utilities is found in the annual Northwest Regional Forecast of the Pacific Northwest Utilities Conference Committee, (formerly the "West Group Forecast"), which lists the combined resources available to meet those loads. Included in those resources are many

jointly-planned plants to supply future resource requirements.

This regional cooperation allows a utility such as The Montana Power Company, which may have deficiency over a period of years, to import power from another state and utility in order to meet its deficiencies. Such an exchange of power and participation keeps the utility from having to build small facilities every time the utility has a small increase in load demand. The utility may be an importer for a period of time, and then it may be an exporter, and then in a few years, it will become an importer again.

This exchange of power among utilities in the Northwest may also occur at certain times of the year and times of the day because of the diversity of peak loads among utilities in this region.

Secondly, regional cooperation and interconnected systems provide greater reliability to the customers of all regions. For example, if one utility's generation or transmission is out of service, another utility's facilities may help accommodate the utility with facilities out of service.

Thirdly, for the same amount of energy and service, the cost of construction and operation of fewer large facilities is less than the cost of construction and operation of many smaller facilities. This helps get energy to customers at the lowest possible rate.

Fourth, fewer large facilities often have less environmental impact than many smaller facilities. For example, one larger transmission line may be built in lieu of several smaller transmission lines.

In summary, these objectives and resulting benefits of regional cooperation are in the interest of each utility and their customers. It is submitted that the regional cooperation is envisioned in siting legislation such as the Montana Major Facility Siting Act.

III.3 EXCHANGE AGREEMENTS

Previously a list of exchange, pooling and interconnection contracts dated March 26, 1980, was submitted to the Department.

An updated version of the list, dated March 30, 1982, and marked Exhibit "G" is attached hereto.

IV. A DESCRIPTION OF THE MONTANA POWER COMPANY'S EFFORTS TO INVOLVE ENVIRONMENTAL PROTECTION AND LAND USE PLANNING AGENCIES IN THE PLANNING PROCESS, AS WELL AS OTHER EFFORTS OF THE MONTANA POWER COMPANY TO IDENTIFY AND TO MINIMIZE ENVIRONMENTAL PROBLEMS AT THE EARLIEST POSSIBLE STAGE IN THE PLANNING PROCESS[3]

IV.1 GENERAL ENVIRONMENTAL POLICY

It is The Montana Power Company's policy to participate with federal and state agencies, as well as public interest groups and citizens, to encourage coordination of energy and environmental programs.

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[3] Montana Major Facility Siting Act 75-20-501(2)(c).

IV.2 PARTICIPATION IN LAND USE AND ENVIRONMENTAL PLANNING

The Montana Power Company continues to research new environmental technologies as an integral part of its energy planning process.

As part of the work on Colstrip Units 3 and 4, the engineering staff has worked closely with the United States Environmental Protection Agency (EPA) on meteorological and air quality modeling pursuant to meeting Class I air quality standards of the Northern Cheyenne Indian Reservation, south of Colstrip. Venturi wet scrubbers, which were substantially new technology when installed by The Montana Power Company at Colstrip Units 1 and 2, will be used at Units 3 and 4. Also, a process that employs dolomitic lime to increase sulfur dioxide removal from emissions has been developed for use at Colstrip Units 3 and 4.

The Montana Power Company provides the Montana Department of Health and Environmental Sciences with monthly ambient air quality reports from monitoring stations in the Colstrip vicinity. The Company provides the Department with periodic groundwater quality reports from sample wells at Colstrip. Under the Montana Pollution Discharge Elimination System of the Clean Water Act, the Company also provides the Department and the EPA with quarterly water quality reports on discharges from the Company's sewage treatment plants and monthly reports on water discharge from the J. E. Corette Generating Plant at Billings.

The Montana Power Company is conducting, supporting, or participating in a number of environmental studies. At Colstrip, studies underway include monitoring the water in the settling ponds, surveying wildlife, conducting a long-term infrared study of the 200-square-mile area surrounding Colstrip, surveying vegetation through a study contracted to the Montana Agricultural Experiment Station, and monitoring the benthic community and water quality of Armell's Creek and both natural and man-made ponds in reclamation areas. Outside the Colstrip area, a study is proceeding on sediment loading of the Clark Fork River near Missoula, general Bio surveys are proceeding on the Clark Fork River near Thompson Falls and on the Missouri River near Helena and Great Falls. In the Canyon Ferry area, we are also starting a two-year study with Montana State University on the ospreys.

In transmission and pipeline projects, it is the Company's policy to involve early in the planning process appropriate land-use planners at the federal, state and local levels as well as individual landowners. Environmental assessments are provided by the Company for projects that affect waterways, federal lands or state lands. The Company also submits formal comments on land-use plans proposed by federal agencies.

The Montana Power Company's environmental staff is comprised of a rather wide background of expertise. The

disciplines represented are biology, geology, range management, recreation resourse management, biochemistry, chemical engineering, environmental engineering, electronic and computer technology. Expertise is kept up-to-date by on-going participation in various professional associations. Active membership is maintained in the following: Ecological Society of America, American Fisheries Society, North American Benthological Society, Power Biologists Association, Air Pollution Control Association, American Chemical Society and the National Recreational & Park Association. The staff also participates in various state and federal environmental activities.

V. PROJECTIONS OF THE DEMAND FOR SERVICES RENDERED BY THE MONTANA POWER COMPANY AND EXPLANATION OF THE BASIS FOR SUCH PROJECTIONS, AND A DESCRIPTION OF THE MANNER AND EXTENT TO WHICH THE PROPOSED FACILITIES WILL MEET THE PROJECTED DEMAND[4]

V.1 GENERAL

The Montana Power Company continuously monitors the demand for electricity and studies and pursues alternate resources to meet the demand. In addition to following the national and regional trends in energy use and developments in resource technology, the Company also makes load and resource forecasts of its own system.

V.1.2 System Load Forecasts

Total system load forecasts are reviewed and updated frequently by The Montana Power Company. The latest

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[4] Montana Utility Siting Act Section 75-20-501(2)(d).

official forecast was made in Fall, 1981. The projected annual loads for the next twenty (20) operating years (July-June) are shown for annual energy and peak on the charts, marked Exhibits "C1" and "C2" and attached hereto.

V.1.2.1 Process and Assumptions

The electric load forecast of The Montana Power Company is developed from a five sector model with sector definitions determined by electricity usage patterns. The five sectors are: Residential, Commercial, Industrial, Contract Industrial, and other. Sales to each sector are forecast independently for a 20-year period, and then disaggregated and/or adjusted to produce detailed revenue forecasts and a load forecast that is the basis of the Company's long range resource planning. The forecast is produced through the use of computer modeling with applications of informed professional judgment where necessary and appropriate. This type of an approach allows for sensitivity analysis and scenario testing.

The Contract Industrial sector consumes about 25% of MPC's total sales and consists of nine large contract customers involved in various industrial processes including primary metal mining, petroleum refining, woods products manufacturing and general smelting. As such, this sector does not lend itself to modeling at least at MPC's service territory level. The forecast is derived through detailed interviews with each firm concerning future additions or deletions of electricity using machinery, etc.

The Other sector is composed of several small nonhomogeneous and/or flat loads. Each component of the Other sector (in total, this sector consumes 11% of MPC's total sales) is forecast individually by trending, contract interpretation and professional judgment.

The Residential, Commercial, and Industrial sectors account for about 64% of MPC's total sales. These three sectors are each modeled econometrically. The three models are of the "aggregate econometric" type which is to say they are primarily driven by an economic base model of the State, which in turn determines population and other associated demographic and economic characteristics of that population (e.g., age distribution, labor force participation rates, employment and income by sector, and migration rates). The economic base of an area is dependent on those business activities which bring "new" dollars into the economy by selling exports. For Montana, these "basic" activities include agriculture, mining and refining (including oil, gas, coal, among others), manufacturing (primarily wood products), and tourism. Our forecast for each of these industries (coupled with the national outlook) is the foundation of the econometric portion of the Load Forecast and also one of the primary judgmental components in the forecasts of the other two sectors.

Our current load forecasts do not specifically include several potential new industrial loads of which we are aware and which are sufficiently large to merit special treatment in the forecasting effort. The plans are not yet "firmed up" to the point where we feel we have a commitment to serve, so they are not yet included in the Base Case forecast. Some of these loads are: (1) the Northern Tier Pipeline, (2) Alumax, and (3) Stauffer Chemical. The forecast does include the reduction in load caused by the Anaconda Company's plant closures in Anaconda and Great Falls.

V.1.2.3. Results*

The results of the 1982-2001 electric load forecast are summarized in Exhibits "H" and "I." Note that the greatest growth is expected in the Residential sector followed closely by Commercial. Both of these sectors are driven by population growth with the Residential sector growing somewhat faster due to electric space heat penetrations that are not present in the Commericial sector. The two Industrial sectors are forecast to grow only slightly over the 20 year forecast period. The Other sector is essentially flat except for irrigation which will grow rapidly in the early 80's as farmers move to replace liquid fuel powered pumps with electricity and make new irrigation investments. However, in the long run, the rate of agri-

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* The results presented here are for the "Base Case" scenario.

cultural investment will parallel the rate of growth in the GNP (approximately 2.5%) and the irrigation growth rate will similarly decline.

Overall, we are forecasting nothing exceptional for the economy of Montana. The State has experienced somewhat of a population boom in the past six to eight years due to unusually good years in agriculture (on the average), greatly increased tourism, the nation wide housing boom which has pumped up the lumber industry, and increasing oil and gas exploration and some coal mining. We expect this to continue for a few more years (with the exception of the lumber industry and tourism) and then slacken to a stable growth to the end of the century. In the near term, Montana is in the fortuitous position of having many of the natural resources for which the nation as a whole is clamoring. Only our relatively under-developed transportation system will prevent the State from capitalizing to a greater extent than forecast. However, in the long run, resource extractive industries are capital, not labor intensive and other regions will reap the economic benefits of value added and Montana's economic boom of the 70's and early 80's will taper off.

Overall, then, what is forecast is a continuation of the State's relative historical position in the national economic perspective. In terms of sectorial shift-share analysis; we are gaining in oil, gas and mining, losing in

lumber and tourism but, net, Montana will remain about the same economically and demographically through 2000 as over the past 30 years.

V.1.3. Unit Area by Substation Load Analysis

In addition to making load and resource forecasts for its total system, The Montana Power Company also monitors loads on each of its approximately 600 substations throughout its service area. The monthly peak and average kilowatts used at each of these substations during 1981 are shown on the table marked Exhibit "J," entitled 1981 Peak and Average Kilowatt Readings for Distribution Substations, which is voluminous and one copy will be submitted to the Department along with this Long Range Plan.

Future demand patterns of a substation unit area for annual increments for the next ten years are shown on the table marked Exhibit "K," entitled "Estimated Peak Substation Load in Kilowatts 1982-1991" which is voluminous and one copy will be submitted to the Department along with this Long Range Plan. The area each of the substations serve and the substation are identified by an installation number, shown on a map which map will also be separately submitted to the Department.

The "NA" designation on the map indicates that the load for that particular substation was not acceptable. Such a designation is a result of one of several possible reasons, including that the reported substation load was obviously incorrect or no reading was reported.

The Estimated Peak Substation Load shown on the map is based on a recording period from April through April in each year.

The column headings are the year in which the recording period started. This is done so that winter peaks may be recorded for the three consecutive winter months of December, January and February; i.e., the 1981 peaks including December of 1981 and January and February of 1982. The peaks indicated are not coincidental. They represent the maximum peak reading anticipated for that season and may occur at any time during that season.

The basic projections were made by fitting a compound growth curve by means of a least squares method fit to the existing data. The projections were then analyzed for their validity, taking into consideration the number of years of data the projection was based on, recent trends in the area, and known load additions. If a projection made by this method is obviously not valid, a reasonable prediction is made based on historical and known load growth data for the area.

V.1.4 Manner of Meeting System Loads

Projections based on continuous monitoring of substations and other factors are studied by The Montana Power Company to determine what expansion programs are necessary on its system. Expansion programs may mean increasing transformer size for capability, adding trans-

formers, or building new substations, new transmission, or generation facilities. New substations or a shifting of loads from substation to substation or transformer to transformer may give an erroneous impression of actual area growth. A careful analysis of changes which have taken place is necessary to determine actual load growth in an area. To establish load growth rates, many factors must be considered and analyzed. Weather conditions, extended outages, switching of loads, construction procedures, industrial and commercial development, urban development, development of residential subdivisions, irrigation and pumping, electric space heating and air conditioning requirements, changes in life styles, and the impacts of alternate energy sources are some of these factors which must be considered as they may affect load growth rates. It should be noted that the sum of the individual substation loads is not equal to the total system load forecast for two major reasons: (1) the substation loads do not include transmission losses sustained on the system between the resource and the substation, and (2) there is substantial diversity among the times of the individual substation peak loads. In load flow and stability computer studies of the entire system, the load distribution across the system is derived using proportionately "shrunk" substation loads so that their sum does equal the total system load forecast. In detailed studies of particular areas of the system, the

substation load forecasts are used unadorned since that particular area can be expected to experience its own undiversified load.

When it appears that additional transmission lines or generation are needed as a result of this monthly and yearly monitoring of substation load changes and as a result of all of the many other factors such as weather conditions, extended outages, switching of loads, industrial and commercial development, urban development, irrigation and pumping, etc., then more detailed studies of transmission line and generation requirements are made.

In addition to the continuous monitoring of the entire system by monthly and yearly changes, The Montana Power Company also takes into consideration the anticipated trends in type of load growth. For example, The Montana Power Company considers inquiries or requests for major additional loads from industrial, agricultural or other sources. The Montana Power Company also considers and anticipates that certain uses of electricity, such as the use of electricity for sprinkler irrigation or home heating, will create substantial additions to its load demand.

The Montana Power Company, in an attempt to fulfill its responsibility to provide electric service to its customers, attempts to balance electrical resources against electrical load. This is done on both a peak and energy basis. Such forecasts must also include consideration of

reserves which are required to make sure that the Company can serve its customers at all times. The forecasts also take into account required down time of plants and facilities for maintenance and contracts of exchange with other utilities. When it is determined that a new source of generation or transmission is needed, The Montana Power Company considers the alternatives for meeting these requirements and makes further detailed studies regarding the needed facility. As pointed out in Section III hereof, such studies are often conducted in cooperation with other utilities in the region.

V.1.5 Whether Projected Facilities Will Meet Projected Demands

The general size and type of utility facilities to be owned and operated by The Montana Power Company, which are discussed in Section II above of this Long Range Plan, are a result of all of these studies and considerations regarding projection and demand on both a total system basis and on a substation unit basis. If the facilities that are proposed in Section II above are allowed to be built as scheduled by The Montana Power Company, such facilities should adequately meet the projected demand. However, because some of the facilities including transmission lines such as Clyde Park-Big Sky-Dillon, Bonner-Missoula #4, Missoula #4-Hamilton Heights, and generating plants, such as Colstrip 3 and 4, have been delayed, primarily by regulatory

authorities, litigation, and right-of-way acquisition, customer demand may not be adequately met.

Adequate power to replace energy deficits may not be available because other utilities in the Pacific Northwest also forecast deficits in the 1980's, and because such replacement power is dependent upon the availability of high priced oil.

EXHIBIT A

RESOURCE PLAN

	1982				1983		1984								
	1st	2nd	3rd	4th	1st	2nd	1st	2nd	1985	1986	1987	1988	1989	1990	1991
- Colstrip #3	C	C	C	C	C	C									
- Colstrip #4	C	C	C	C	C	C	C	C							
- Salem *		F			P	P	P	P	C	C	C	C			
- Kerr Hydro Upgrade						F			P	P	C	C			
- Thompson Falls Hydro			F				P	P	P	C	C				
- Hauser Hydro					F				P	P	C	C			
- Ryan Hydro		F					P	P	P	C	C				
- Carter Hydro *							F				P	P	C	C	C
- Buffalo Rapids Hydro									F						
- Combustion Turbines *						F		P	P	C	C	C	C	P	C

Fp - File Preliminary Permit Application
F - File Application With Appropriate Agencies
P - Preconstruction
C - Construction

Schedule Commercial Operation Dates

Colstrip #3 January, 1984
Colstrip #4 July, 1985

Ryan ½ year construction 1987
Hauser ½ year construction 1988

* Construction schedules reflect the earliest expected in service date as per the MPC Planning Range as shown in Exhibits C-1 through C-4. Construction is contingent upon continued re-evaluation of MPC forecasts of future load requirements.

EXHIBIT "B" IS VOLUMINOUS

AND HAS BEEN SUBMITTED

ONLY TO THE DEPARTMENT OF

NATURAL RESOURCES & CONSERVATION

THE MONTANA POWER COMPANY
ENERGY - AVERAGE MW
BASE CASE SCENARIO

Year	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Energy Load	762	793	824	853	880	907	938	968	998	1,027	1,056	1,083	1,107	1,130	1,148	1,166	1,187	1,208	1,230	1,252
Committed Resources																				
Hydro - Critical Water	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337
Corette	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139
Bird	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colstrip 1 & 2	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270
Colstrip 3	-	-	76	162	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172
Colstrip 4	-	-	-	-	151	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172
Firm Transfers	131	129	76	77	80	82	71	68	68	65	65	65	65	65	65	-	-	-	-	-
TOTAL	877	875	898	985	1,149	1,172	1,161	1,158	1,158	1,155	1,155	1,155	1,155	1,155	1,155	1,090	1,090	1,090	1,090	1,090
Scheduled Maintenance	35	35	35	60	65	78	63	63	63	63	63	63	63	63	63	63	63	63	63	63
Net	842	840	863	925	1,084	1,094	1,098	1,095	1,095	1,092	1,092	1,092	1,092	1,092	1,092	1,027	1,027	1,027	1,027	1,027
Uncommitted Resources																				
Hauser, Ryan, Thompson Falls	-	-	-	-	-	-	5	26	26	26	26	26	26	26	26	26	26	26	26	26
Kerr Upgrade	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0
Resource Salem	-	-	-	-	-	-	-	-	-	-	-	-	-	-	198	248	248	248	248	248
Resource Carter	-	-	-	-	-	-	-	-	-	-	18	36	36	36	36	36	36	36	36	36
Resource Peak	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-	-	-	-	-	-	5	26	26	26	44	62	62	62	260	310	310	310	310	310
TOTAL RESOURCES	842	840	863	925	1,084	1,094	1,103	1,121	1,121	1,118	1,136	1,154	1,154	1,154	1,352	1,337	1,337	1,337	1,337	1,337
Surplus (Deficiency) Over Critical Water	80	47	39	72	204	187	165	153	123	91	80	71	47	24	204	171	150	129	107	85
Median Water Adder Committed Resources	66	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67
Median Water Adder Uncommitted Resources	-	-	-	-	-	-	9	20	23	24	34	44	44	44	44	44	44	44	44	44
Surplus (Deficiency) Over Median Water	146	114	106	139	271	254	241	240	213	182	181	182	158	135	315	282	261	240	218	196

1/ Peak resources could be a combination of purchases, exchanges, load management and/or combustion turbines.

170133-7

Exhibit C-2

THE MONTANA POWER COMPANY
PEAK MW
BASE CASE SCENARIO

Year	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Firm Peak Load	1,168	1,219	1,259	1,305	1,343	1,387	1,432	1,477	1,519	1,560	1,601	1,637	1,673	1,702	1,721	1,750	1,778	1,809	1,836	1,866
Committed Resources																				
Hydro	518	518	518	518	518	518	518	518	518	518	518	518	518	518	518	518	518	518	518	518
Bird	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Corette	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180
Colstrip 1 & 2	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330
Colstrip 3	-	-	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
Colstrip 4	-	-	-	-	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
Firm Transfers	397	404	280	283	286	291	80	80	80	77	77	77	77	77	77	-	-	-	-	-
Forced Outage Reserves	(195)	(195)	(226)	(226)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)
TOTAL	1,300	1,307	1,362	1,365	1,546	1,551	1,340	1,340	1,340	1,337	1,337	1,337	1,337	1,337	1,337	1,260	1,260	1,260	1,260	1,260
Uncommitted Resources																				
Hauser, Ryan																				
Thompson Falls	-	-	-	-	-	-	40	115	115	115	115	115	115	115	115	115	115	115	115	115
Kerr Upgrade	-	-	-	-	-	-	-	19	28	28	28	28	28	28	28	28	28	28	28	28
Resource Salem	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330	330	330	330	330	330
Resource Carter	-	-	-	-	-	-	-	-	-	-	75	75	75	75	75	75	75	75	75	75
Resource Peak [1]	-	-	-	-	-	-	50	50	100	100	100	125	125	125	125	125	125	125	125	125
Forced Outage Reserves							(10)	(15)	(22)	(22)	(26)	(30)	(30)	(30)	(79)	(79)	(79)	(79)	(79)	(79)
TOTAL	-	-	-	-	-	-	80	169	221	221	292	313	313	313	594	594	594	594	594	594
Surplus (Deficiency)	132	88	103	60	203	164	(12)	32	42	(2)	28	13	(23)	(52)	210	104	76	45	18	(12)

[1] Peak resources could be a combination of purchases, exchanges, load management and/or combustion turbines.

170133-5

THE MONTANA POWER COMPANY
ENERGY - AVERAGE MW
HIGH SCENARIO

Year	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Energy Load	789	841	896	949	990	1,022	1,057	1,091	1,122	1,151	1,180	1,210	1,237	1,269	1,301	1,333	1,368	1,403	1,440	1,480
Committed Resources																				
Hydro - Critical Water	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337
Corette	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139
Bird	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colstrip 1 & 2	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270
Colstrip 3	-	-	76	162	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172
Colstrip 4	-	-	-	-	151	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172
Firm Transfers	131	129	76	77	80	82	71	68	68	65	65	65	65	65	65	-	-	-		
TOTAL	877	875	898	985	1,149	1,172	1,161	1,158	1,158	1,155	1,155	1,155	1,155	1,155	1,155	1,090	1,090	1,090	1,090	1,090
Scheduled Maintenance	35	35	35	60	65	78	63	63	63	63	63	63	63	63	63	63	63	63	63	63
Net	842	840	863	925	1,084	1,094	1,098	1,095	1,095	1,092	1,092	1,092	1,092	1,092	1,092	1,027	1,027	1,027	1,027	1,027
Uncommitted Resources																				
Hauser, Ryan, Thompson Falls	-	-	-	-	-	-	5	26	26	26	26	26	26	26	26	26	26	26	26	26
Kerr Upgrade	-	-	-	-	-	-	-	0	0	00	0	0	0	0	0	0	0	0	0	0
Resource Salem	-	-	-	-	-	-	-	-	198	248	248	248	248	248	248	248	248	248	248	248
Resource Carter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	36	36	36	36	36
Resource 97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	198	248	248	248
Resource Peak [1]	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-	-	-	-	-	-	5	26	224	274	274	274	274	274	292	310	508	558	558	558
TOTAL RESOURCES	842	840	863	925	1,084	1,094	1,103	1,121	1,319	1,366	1,366	1,366	1,366	1,366	1,384	1,337	1,535	1,585	1,585	1,585
Surplus (Deficiency) Over Critical Water	53	(1)	(33)	(24)	94	72	46	30	197	215	186	156	129	97	83	4	167	182	145	105
Median Water Adder Committed Resources	66	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67
Median Water Adder Uncommitted Resources	-	-	-	-	-	-	9	20	23	24	24	24	24	24	24	34	44	44	44	44
Surplus (Deficiency) Over Median Water	119	66	34	43	161	139	122	117	287	306	277	247	220	188	174	105	278	293	256	216

[1] Peak resources could be a combination of purchase, exchanges, load management and/or combustion turbines.

170133-3

THE MONTANA POWER COMPANY
PEAK MW
HIGH SCENARIO

Year	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Firm Peak Load	1,223	1,308	1,388	1,467	1,514	1,563	1,612	1,661	1,702	1,742	1,779	1,821	1,861	1,903	1,946	1,990	2,038	2,083	2,135	2,186
Committed Resources																				
Hydro	518	518	518	518	518	518	518	518	518	518	518	518	518	518	518	518	518	518	518	518
Bird	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Corette	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180
Colstrip 1 & 2	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330
Colstrip 3	-	-	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
Colstrip 4	-	-	-	-	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
Firm Transfers	397	404	280	283	286	291	80	80	80	77	77	77	77	77	77	-	-	-	-	-
Forced Outage Reserves	(195)	(195)	(226)	(226)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(258)
TOTAL	1,300	1,307	1,362	1,365	1,546	1,551	1,340	1,340	1,340	1,337	1,337	1,337	1,337	1,337	1,337	1,260	1,260	1,260	1,260	1,260
Uncommitted Resources																				
Hauser, Ryan, Thompson Falls	-	-	-	-	-	-	40	115	115	115	115	115	115	115	115	115	115	115	115	115
Kerr Upgrade	-	-	-	-	-	-	-	19	28	28	28	28	28	28	28	28	28	28	28	28
Resource Salem	-	-	-	-	-	-	-	-	330	330	330	330	330	330	330	330	330	330	330	330
Resource Carter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75	75	75	75	75	75
Resource 97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330	330	330	330
Resource Peak [1]	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Forced Outage Reserves	-	-	-	-	-	-	(32)	(37)	(87)	(87)	(87)	(87)	(87)	(87)	(91)	(91)	(141)	(141)	(141)	(141)
TOTAL	-	-	-	-	-	-	208	297	586	586	586	586	586	586	657	657	937	937	937	937
Surplus (Deficiency)	77	(1)	(26)	(102)	32	(12)	(64)	(24)	224	181	144	102	62	20	48	(73)	159	114	62	11

[1] Peak resources could be a combination of purchases, exchanges, load management and/or combustion turbines.

170133-1

TRANSMISSION
Ten Year Plan

Project & General Location	Voltage (kV)	Approx. Length (Miles)	1982 1st Qr	1982 2nd Qr	1982 3rd Qr	1982 4th Qr	1983 1st Half	1983 2nd Half	1984 1st Half	1984 2nd Half	1985	1986	1987	1988	1989	1990	1991
Colstrip-Broadview "A"	500	113	P	P	P	P	C	C									
Colstrip-Broadview "B"	500	116	C	C	C	C											
Broadview-Townsend "A"	500	136	C	C	C	C	C	C									
Broadview-Townsend "B"	500	136	C	C	C	C	C	C									
Laurel Auto-Laurel "B"	50	1.6								C	C						
Convert Rimrock-Bellrock - 8th Street Line to 100 kV	100	12								C	C	C					
Bozeman - So. 19th Sub. Tap. to H.S.S.	50	4						C	C	C	C	C					
Reconductor Sun River	69	31					C	C			C						
Loweth-White Sulphur "A"	69	16					C	C	C	C	C	C					
Plains 100 kV Tap Line	100	4							C	C	C						
*Resource 89 Trans.	230	19				F	S	S	S	S	P	P	P	C	C	C	
Dillon-Sheridan	161	36.8	C	C	C			C		C							
Sheridan-Ennis	161	21.8	P	P	C	C	C	C									

*Filing fee for the electric transmission line will be filed under Resource 89 filing.

TRANSMISSION
Ten Year Plan

Project & General Location	Voltage (kV)	Approx. Length (Miles)	1982 1st Qr	1982 2nd Qr	1982 3rd Qr	1982 4th Qr	1983 1st Half	1983 2nd Half	1984 1st Half	1984 2nd Half	1985	1986	1987	1988	1989	1990	1991
Bozeman-Ennis	161	51.0	P	P	P	P	C	C		C							
Ennis-Big Sky	161	25			P	P	P	P	P	P	C	C					
Laurel-Bridger "B"	100	33			F	S	S	S	C	C	C						
Billings-Colstrip Line Reroute at Colstrip	230	1.8			C												
Colstrip-Nichols Line Reroute at Colstrip	115	2.9			C												
Bridger-Red Lodge	50	27		C	C												
Alkali Creek-Laurel	230	21			F		S	S	S	C	C						
Clyde Park-Emigrant Line Tap	161	42					P	P	C	C	C						
Emigrant-Gardiner	69	25								P	C	C	C				
Missoula-Hamilton Heights	161	40	C	C	C	C	C										
Bonner - #4 Sub.	161		P	P	C	C	C										
East Gallatin-Belgrade	50	10	C	C	C	C	C										

TRANSMISSION
Ten Year Plan

Project & General Location	Voltage (kV)	Approx. Length (Miles)	1982 1st Qr	1982 2nd Qr	1982 3rd Qr	1982 4th Qr	1983 1st Half	1983 2nd Half	1984 1st Half	1984 2nd Half	1985	1986	1987	1988	1989	1990	1991
Wicks Lane	230	4						P	P	P	C	C					
Tapline to Castle Rock Substation	115	4		C	C												

F = File application.

P = Studies and Preliminaries before construction.

C = Construction.

POTENTIAL TRANSMISSION

Project & General Location	Voltage (kV)	Approx. Length (Miles)	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Missoula #6-Waldorf	100	9	C	C								
Anaconda-Philipsburg-Drummond	100	53		F	S	S	C	C				
Garrison-Helena	230	50		F	P	C	C					
Helena-Great Falls	230	80				F		S	P	C	C	
Roundup-Ivanhoe-Sumatra	100	50	F	S	S	P	C	C				
Ovando-Missoula	230	60			F	S	SP	C	C			
Plains-Superior-St. Regis	100	25			F	P	P	P	C	C		
East Helena-Hauser	100	8						C				
161/230 kV Tie Line to Dillon-Salmon Sub.	161/230	8		P	C	C						

F = File application.
S = Study time and hearing.
P = Preconstruction.
C = Construction.

EXHIBIT F

TRANSMISSION PROJECTS FOR CONVERSION TO HIGHER VOLTAGE LEVELS OR TO BE RECONDUCTORED

Project & General Location	Voltage (kV)	Approx. Length (Miles)	1982 1st Half	1982 2nd Half	1983 1st Half	1983 2nd Half	1984	1985	1986	1987	1988	1989	1990	1991
Colstrip-Broadview "A"	500	113	P	P	C	C								
Loweth-White Sulphur	69	16	C	C	C	C	C	C						
Rimrock-Bellrock - 8th Street Line	100	12					C	C	C					
Sheridan-Laurin	69	11	C	C										
Laurin-Virginia City	69	8			C	C								
Canyon Creek-Lincoln	50	25	P	P	P	C	C	C						
E. Helena-Helena	69	6	C	C	C	C	C							
Rainbow Stanford	69	82	C	C										
Missoula #6-Waldorf	100	9	C	C										

F = File application.

P = Preconstruction.

C = Construction.

LIST OF CONTRACTS

	EFFECTIVE DATE	CONTRACT NO.
Pacific Northwest Coordination Agreement	09/15/64	14-03-48221
BPA-Firm Purchase, Amendment No. 4 (Amends earlier agreement in its entirety)	08/25/75	14-03-51702
BPA & WPPSS-Hanford Exchange	04/12/63	14-03-35621
Exhibit B (Points of Delivery)	09/01/73	
BPA & WPPSS-WPPSS No. 1 Exchange	02/06/73	14-03-39212
Amendment No. 1 (Relocation of Project)	05/31/74	
Letter Agreement (Option on Extended Operation & Cost of Relocation)	05/08/74	
BPA-Hanford Extension (1977-1983)	08/26/77	14-03/79120
Amendment No. 1 (Change of Fiscal Year)	05/18/78	
BPA-Exportable Energy (to Southwest)	01/13/69	14-03-73155
BPA-Hot Springs-Anaconda Wheeling	10/22/63	14-03-40534
Supplement No. 1 (Ovando-Gt. Falls)	03/17/67	
BPA-Glacier Co-op Wheeling	08/25/75	14-03-59142
BPA-Missoula Co-op Wheeling	01/15/68	14-03-74725
Amendment No. 1 (Huson)	04/30/75	
Amendment No. 2 (Clinton)	08/11/78	
MPC-Missoula Electric Co-op. Exhibit B Revision #1 Agreement For Use of Distribution Facilities (Wheeling to Petty Creek) (Miller Creek)	08/01/78	
BPA-Ravalli Co-op Wheeling	01/15/68	14-03-74726
Amendment No. 1 (Grantsdale)	03/18/71	
Amendment No. 2 (Victor)	10/18/74	
BPA-Northern Lights Co-op Wheeling	01/15/68	14-02-74724
MPC-Northern Lights Co-op Amendment #1 (Cherry Creek)	12/12/79	

	EFFECTIVE DATE	CONTRACT NO.
BPA-Vigilante Co-op Wheeling	08/21/67	14-03-53715
Amendment No. 1 (East Bench)	04/27/70	
Amendment No. 2 (Barretts)	09/24/77	
Amendment No. 3 (Gate of Mountains - Lump Gulch)	05/04/79	
MPC-Sun River Electric Co-op - Wheeling Letter Agreement (MPC Wheeling to Augusta)	10/04/78	
WAPA-Rainbow-Yellowtail - Wheeling Letter Agreement	12/22/77	
USBR-Anaconda-Billings or Hot Springs-Yellowtail Wheeling - Letter Agreement	03/22/68	
USBR-Interconnection, Exchange and Wheeling	05/14/64	14-06-600-8264
Supplement No. 4 (Maintenance)	05/14/70	
Letter Agreement (Reducing Supv. Control Payment)	08/04/72	
Supplement No. 5 (Yellowtail Interconnection)	07/05/71	
Letter Agreement (Net Billing)	12/10/64	
Revision No. 9 Exhibit A	09/25/78	
USBR-Missouri River Coordination	03/30/72	14-06-600-476A
Amendment #1 (Value of Benefits Payments)	06/08/79	
USBR-Cut Bank Line & Area Transmission	07/04/70	14-06-600-58A
USBR-Canyon Ferry-Rainbow Wheeling	01/25/51	179r-1838
Supplement No. 1 (Temp. Initial Service)	05/10/54	
Supplement No. 2 (Extending Term)	07/01/70	
Glacier Co-op-Cut Bank Interconnection Agreement	04/05/71	
AMPS Interconnection Agreement	04/21/65	
Service Schedule No. 1 (PUMI Agreement)	07/01/69	
Exhibits A-1; A-2 (Revised)	08/19/69	
Exhibits A-2 (Revised)	02/01/70	
Exhibits A-2 (Revised)	08/01/71	
Memo of Understanding (O&M Accounting Procedures)	10/01/71	
Idaho-Montana Service Schedule (Interchange, Purchase & Sale)	04/21/65	
Amendment No. 1 (Extending Term)	03/01/74	
Idaho, Utah, Montana Interconnection Agreement	03/04/41	

	EFFECTIVE DATE	CONTRACT NO.
Service Schedule A-3 with Utah (Sale)	02/14/74	
Service Schedule B-2 with Utah (Exchange)	02/14/74	
Service Schedule F-2 with Idaho (Salmon use of Facilities)	10/01/54	
ICP Agreement (Intercompany Pool)	09/01/73	
PP&L-Montana Exchange Agreement	12/21/65	
PP&L-Montana Mutual Wheeling Letter Agreement	04/24/67	
USIIS Sales Agreement (Flathead Irrigation Project)	06/23/80	
WSCC Agreement (Western Systems Coordinating Council)	08/04/67	
WWP-Contract (Sale & Exchange)	10/01/64	
Amendment No. 1 (Hydro @ BPA Rates)	08/31/66	
Amendment No. 2 (Sale of Firm Peaking Power)	07/01/70	
WWP-Letter Agreement (Hanford Energy Exchange for Peak)	09/02/75	
Central Montana Generation and Transmission Cooperative (Sale to Co-ops)	01/30/74	
Exhibit A (Revised)	10/27/76	
Exhibit B (Revised)	10/27/76	
Exhibit C (Rate Schedule)	07/01/74	
Big Horn Co-op-Power Agreement	03/12/71	
Letter of Understanding (Yellowtail Details)	03/12/71	
Supplement No. 1 (Contract Demand & Rates)	02/15/74	
PGE-Exchange Letter Agreement (Capacity & Energy Exchange)	09/08/78	
Revised Appendix 1 to Exchange Letter Agreement	10/01/78	
PGE-Exchange Letter Agreement (Capacity & Energy Exchange)	01/11/80	
Appendix 1 to Exchange Letter Agreement	01/11/80	

EXHIBIT H

Growth rates* in sales by sector and peak and energy loads. All growth rates are average annual growth rates calculated against 1981 actual data.

Sales	1981-1985 %	1981-1990 %	1981-2001 %
Residential	6.91	5.85	4.38
Commercial	5.15	3.91	2.68
Industrial	0.37	1.05	1.23
Contract Industrial	1.45	1.45	0.70
Other	4.21	3.77	3.45
Total	4.13	3.60	2.75
Load			
Energy	3.79	3.44	2.66
Peak	3.80	3.40	2.57

*Note that growth rates are useful for comparing changes over time in a given sector, but they may be misleading if used for other types of comparisons. This is because there exists no truly "average year" against which to base the starting point! This is true both in comparisons between sectors in a utility and between utilities.

EXHIBIT I

Growth rates for important input variables. All growth rates are average annual growth rates calculated against 1980 actual data.

	1980-1985 %	1980-1990 %	1980-2001 %
Population	1.92	1.46	1.13
Personal Income*	3.77	3.12	2.90
Electricity Price*	9.71	4.69	3.18

*In real (1972 = 100) dollars; that is, dollars with inflation removed.

EXHIBIT "J" IS VOLUMINOUS

AND HAS BEEN SUBMITTED

ONLY TO THE DEPARTMENT OF

NATURAL RESOURCES & CONSERVATION

EXHIBIT "K" IS VOLUMINOUS

AND HAS BEEN SUBMITTED

ONLY TO THE DEPARTMENT OF

NATURAL RESOURCES & CONSERVATION